# Local water management

*International experience and lessons learned*

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# Local water management

1. IWRM at EU level
2. Local water management in the EU
3. Example arid country (Egypt)
4. Example humid country (Netherlands)
5. Choices to be made
6. Lessons learned

# 1. IWRM at EU level

**Water Framework Directive (WFD):**

- Integrated Water **Resources** Management
- Mainly about protecting the **resources**
- **River basin management plans** obligatory

**Ukraine has already started implementing the WFD**

# 2. Local water management in the EU

No uniform model for local water management in the EU:

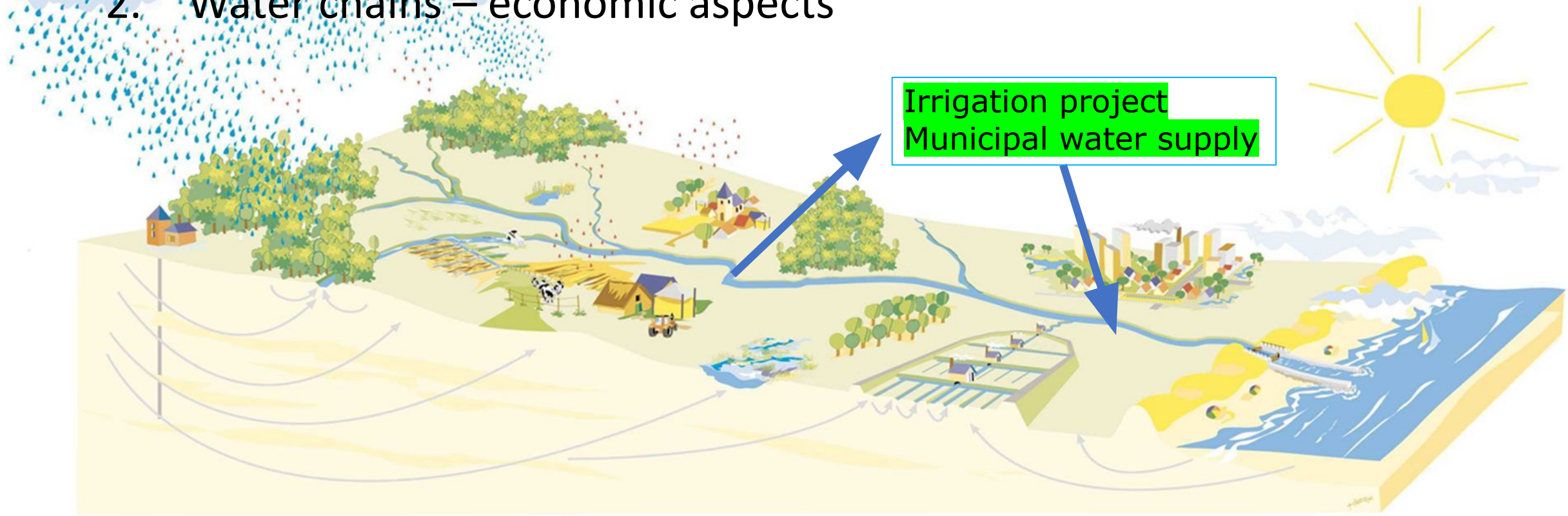
- Netherlands: IWRM at local level by Water Boards
- Germany: broad spectrum of water-tasks by water-boards and diverse types of other local organizations
- France: local water management organized centrally by the six River Basin management authorities
- Brittain: privatised local water management organizations

**No clear set of lessons learned on local water management from the EU experience. NL and Germany interesting for Ukraine.**

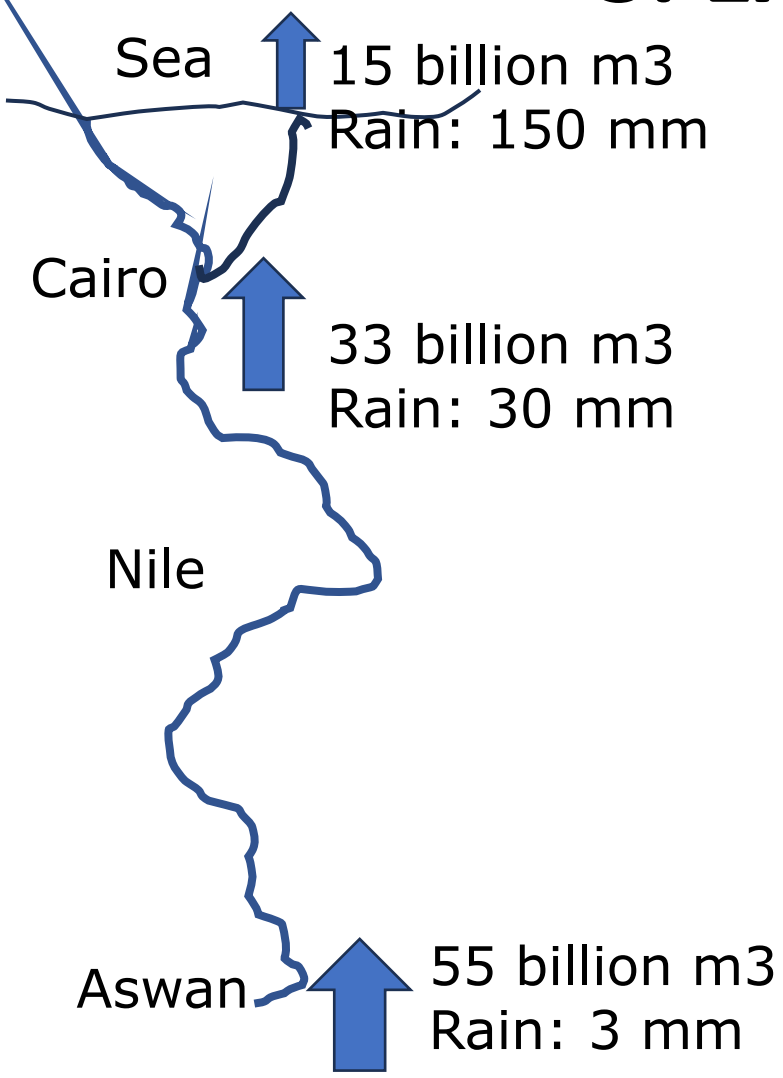
# Local water management

Now let's examine the two functions:

1. IWRM – EU legislation - environment
2. Water chains – economic aspects



# 3. Example arid country (Egypt)




National Level: MWRI: Ministry of **Water Resources and Irrigation**

At district level: **Irrigation District**

In the past (until mid-previous century) the Government (Irrigation District) Managed water distribution and supply to agriculture to field level.

# 3. Example arid country (Egypt)

Last century problems emerged:

- Farms became smaller (average less than 1 ha now)
- Farmers used diesel pumps
- Tail-enders received less water than their fair share
- Government lacked funds to remedy this

 **Introduction of Water User Organizations at the lowest canal level (average 12,000 ha; 20,000 farmers)**

# 3. Example arid country (Egypt)

Today:

- National: Government (MWRI) responsible for IWRM and river Nile
- District: Government (Irrigation District) responsible for water allocation and distribution
- Local: democratic WUO's for operation and management
- Funds: all costs (except local) from general tax money

- Advantages:
- Better equity in water distribution (tailenders)
- Less costs for national budget

# 4. Example of humid country (Netherlands)

- A large part of the Netherlands lies below sea-level
- Approximately 50 % of population and 70% of GDP are below…
- 60% of the land below sea level
- Amsterdam, Rotterdam, and Schiphol Airport below sea level

# Water boards in The Netherlands

- Evolved by centuries of cooperation and merging
- Claimed to be the oldest democracies in the world
- Elected boards of representatives

# From physical cooperation to dedicated water taxes

# What does a Water board do?

Netherlands

- Flood control; **(original task)**
  - Protection against flooding
- Water quantity control; **(more recent task for farmers, nature, and climate)**
  - Managing the right amount of water at the right level
- Water quality control; **(imposed by law for IWRM implementation)**
  - Improving the quality of surface water
  - Combating water pollution
  - Wastewater treatment

Netherlands

# Today: authorities involved in water management:

- National Government, Ministry of Infrastructure: national policy, legislation
- State Water Authority: policy implementation, maintenance main water infrastructure **(from general taxes)**
- Water Boards: maintenance dikes, dunes, canals, ditches) integrated water policy at local level, sewage water treatment **(dedicated local water-taxes)**
- Municipalities: water management in urban areas, sewerage systems **(dedicated local taxes)**

# Example Water Board Governance Netherlands

GOVERNING BODY:

- Chair-person + 25 elected members
  - 10 inhabitants
  - 7 landowners
  - 5 property owners
  - 3 industry
  - Nature….

# Who pays for local water management?

- Landowners (agriculture and nature)
- Owners of industrial property
- Owners of residential property
- Inhabitants
- According to their interest (benefit principle)
- The more you pay, the more you say

Netherlands

# Principles for financial instruments:

Flood protection, water supply, drainage:

- Benefit
- Pay
- Say

Water quality:

- Polluter pays principle

# Farmers benefits

Floods have always threatened Dutch agriculture (60% below Seal level)

- Lower groundwater increases the growing season;
- Easier for machines for land preparation, sowing and manuring
- Mineralization of organic matter increases fertility

**But:**

- **Almost 65% of our peat soils have disappeared by drainage**
- **Resulting in land subsidence and increased drainage costs**
- **Please don’t make the same mistake in Ukraine**

# Casus Waterboard Stichtse Rijnlanden

Netherlands

Stakeholder process to increase groundwater level in peat soils by:

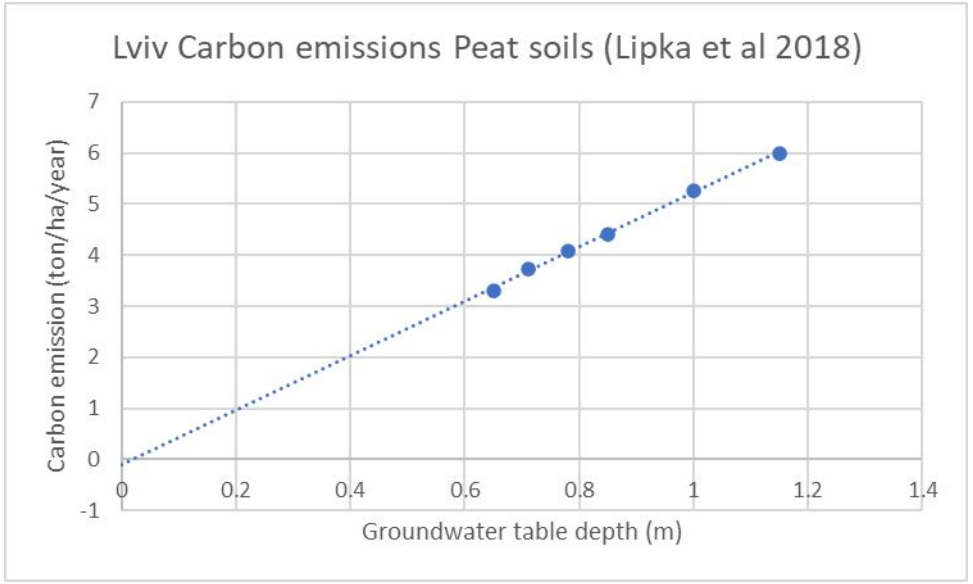
- Other crops adapted to wet conditions
- Water supply in summer
- Infiltration through drainage
- New farm business models in combination with biodiversity

# Carbon trade funds for finance?

Decrease of drainage in winter + infiltration in summer will decrease carbon release to the atmosphere

- Examples for Germany (rewetting peat lands – local funds) average €510/ha – see next slide
- Example from NL (also local funds) €18/ton $CO_2$ Applied to Lviv data this could result in compensations of up to 72 €/ha/year

 Investigations needed to find Carbon Trade Funds



# Carbon trade funds for finance?

Experiences from Germany (local funds)

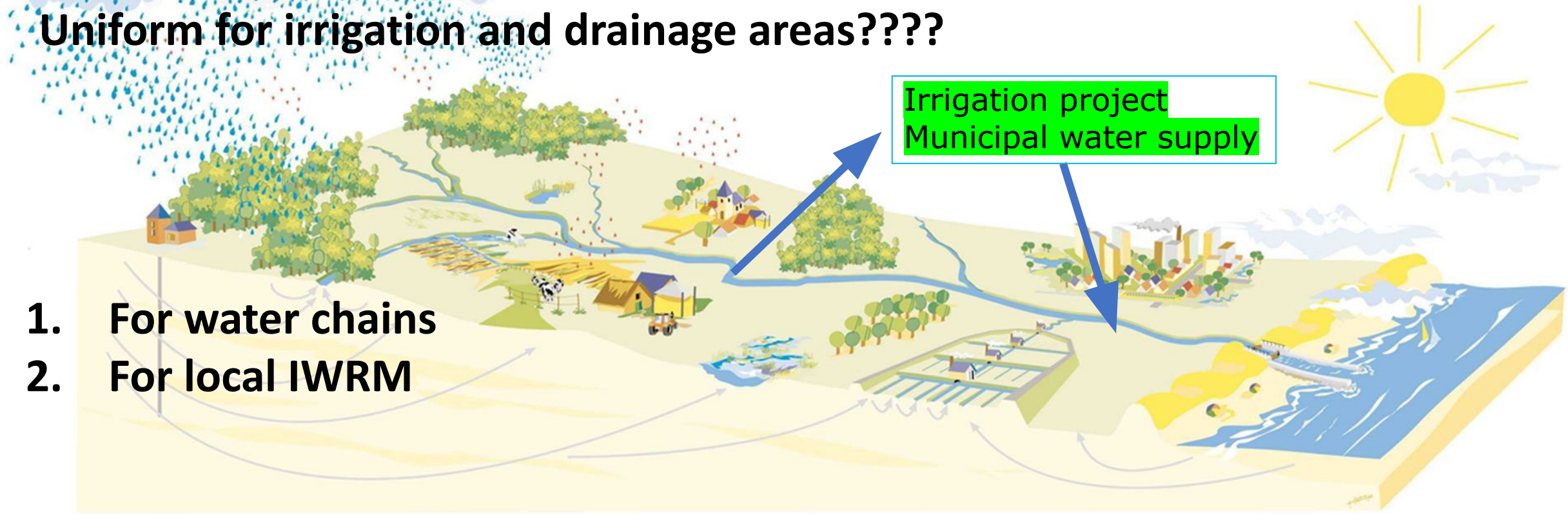
*Table 1: Price per ton of $CO_2$eq sold as part of the MoorFutures® Scheme https://www.moorfutures.de*

| Scheme | Area Hectares | Tons per ha per yr | Volume $tCO_2eq$ | Duration Years | Price per $tCO_2eq$ inc (ex VAT) | Gross Annual Income per ha per yr (ex VAT) |
|---|---|---|---|---|---|---|
| Gelliner Bruch – Mecklenburg – Western Pomerania | 6.7 | 17.3 | 5,800 | 50 | €33.62 | €581.63 |
| Polder Kieve – Mecklenburg – Western Pomerania | 54.5 | 5.3 | 14,325 | 50 | €29.41 | €155.87 |
| Cameroon meadow – Mecklenburg – Western Pomerania | 8.0 | 7.5 | 3,000 | 50 | | |
| Rehwiese – Brandenburg | 9.7 | 13.9 | 6,744 | 50 | €67.23 | €934.50 |
| Königsmoor – Schleswig – Holstein | 68.0 | 11.6 | 39,520 | 50 | €53.78 | €623.85 |
| Average figures for all schemes | 29.4 | 11.1 | 13,878 | 50 | €46.01 | €510.71 |

# 5. Choices to be made for local water management

**Government, Private or Public????**

**Uniform for irrigation and drainage areas????**




1. **For water chains**
2. **For local IWRM**

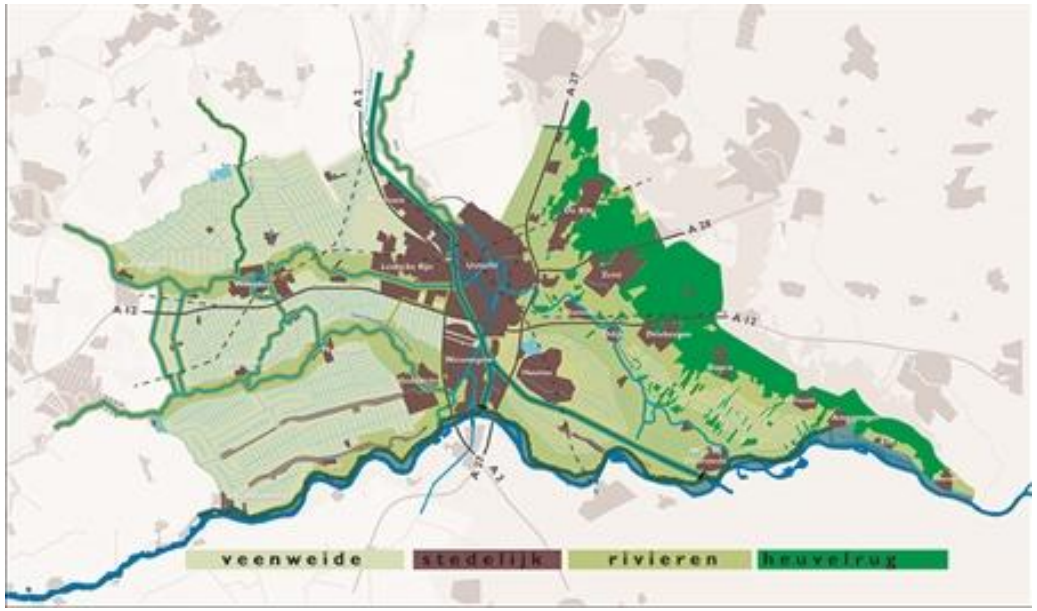
# Local water chains (Irrigation and DW supply)

| **Local water chain** | advantage | disadvantage |
|---|---|---|
| **Government** | General taxes<br>Quality control | Lack of Government funds (war)<br>Corruption risks<br>Inefficient |
| Private | Fast decision making<br>Indpendent of politics | Monopoly |
| Public | Democratic<br>Independent of politics<br>Cheaper | Slow decision making |

# Local IWRM (multifunctional drainage areas)

| **Local IWRM** | advantage | disadvantage |
|---|---|---|
| Government | Better norm obeyance<br>Quality control | Expensive<br>Neglect local interests<br>Inefficient |
| Private | Not applicable? | Not applicable? |
| Public | Democratic<br>Independent of politics<br>Cheaper | Slow decision making<br>Less obeyance to norms |

# CASUS : Waterboard Stichtse Rijnlanden, middle of NL, western part are deep peatlands




**<u>Casus :</u> For decades the Farmers and Agriculture had 'not-wise' practice to continue subsidance, lower level, lower level…. oxidating the peatsoils…..**
**<u>Now finally all agree</u> to prevent or mitigate further subsidance of the peatlands : waterboard, farmers, experts, municipality, environment, all work together on innovations to prevent further damages….**

# CASUS : HOW to stop or mitigate the subsidence of peatlands, …


- Best for nature, environment and climate would be to stop dairy agriculture in these areas at all, but that would cost 2 billion euro to expropriate all farms….
- So second best is to stop or mitigate subsidence by :
- Optimizing agricultural practice to develop wet-agriculture practices, even other wet crops
- Water supply by Waterboard in summer period
- Water-infiltration in summer through existing drainage pipes
- Innovation- competitions and -subsidy for best mitigations by farmers
- Other mowing cycle for farmers in spring
- Nature-friendly farming on lands of nature-protection
- …more…

# Final remarks and questions:

- Ukraine must select the best local institutions needed

- Uniform local institutions of irrigation areas in the south and drainage areas in the north?
- Separate for chain organisations and local IWRM institutions?